

110TH CONGRESS
2D SESSION

H. R. 5940

IN THE SENATE OF THE UNITED STATES

JUNE 6, 2008

Received; read twice and referred to the Committee on Commerce, Science,
and Transportation

AN ACT

To authorize activities for support of nanotechnology
research and development, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

1 **SECTION 1. SHORT TITLE.**

2 This Act may be cited as the “National
3 Nanotechnology Initiative Amendments Act of 2008”.

4 **SEC. 2. NATIONAL NANOTECHNOLOGY PROGRAM AMEND-**
5 **MENTS.**

6 The 21st Century Nanotechnology Research and De-
7 velopment Act (15 U.S.C. 7501 et seq.) is amended—

8 (1) by striking section 2(c)(4) and inserting the
9 following new paragraph:

10 “(4) develop, within 12 months after the date
11 of enactment of the National Nanotechnology Initia-
12 tive Amendments Act of 2008, and update every 3
13 years thereafter, a strategic plan to guide the activi-
14 ties described under subsection (b) that specifies
15 near-term and long-term objectives for the Program,
16 the anticipated time frame for achieving the near-
17 term objectives, and the metrics to be used for as-
18 sessing progress toward the objectives, and that de-
19 scribes—

20 “(A) how the Program will move results
21 out of the laboratory and into applications for
22 the benefit of society, including through co-
23 operation and collaborations with
24 nanotechnology research, development, and
25 technology transition initiatives supported by
26 the States;

1 “(B) how the Program will encourage and
2 support interdisciplinary research and develop-
3 ment in nanotechnology; and

4 “(C) proposed research in areas of national
5 importance in accordance with the requirements
6 of section 5 of the National Nanotechnology
7 Initiative Amendments Act of 2008;”;

8 (2) in section 2—

9 (A) in subsection (d)—

10 (i) by redesignating paragraphs (1)
11 through (5) as paragraphs (2) through (6),
12 respectively; and

13 (ii) by inserting the following new
14 paragraph before paragraph (2), as so re-
15 designated by clause (i) of this subpara-
16 graph:

17 “(1) the Program budget, for the previous fiscal
18 year, for each agency that participates in the Pro-
19 gram, including a breakout of spending for the de-
20 velopment and acquisition of research facilities and
21 instrumentation, for each program component area,
22 and for all activities pursuant to subsection
23 (b)(10);”;

24 (B) by inserting at the end the following
25 new subsection:

1 “(e) STANDARDS SETTING.—The agencies partici-
2 pating in the Program shall support the activities of com-
3 mittees involved in the development of standards for
4 nanotechnology and may reimburse the travel costs of sci-
5 entists and engineers who participate in activities of such
6 committees.”;

7 (3) by striking section 3(b) and inserting the
8 following new subsection:

9 “(b) FUNDING.—(1) The operation of the National
10 Nanotechnology Coordination Office shall be supported by
11 funds from each agency participating in the Program. The
12 portion of such Office’s total budget provided by each
13 agency for each fiscal year shall be in the same proportion
14 as the agency’s share of the total budget for the Program
15 for the previous fiscal year, as specified in the report re-
16 quired under section 2(d)(1).

17 “(2) The annual report under section 2(d) shall in-
18 clude—

19 “(A) a description of the funding required by
20 the National Nanotechnology Coordination Office to
21 perform the functions specified under subsection (a)
22 for the next fiscal year by category of activity, in-
23 cluding the funding required to carry out the re-
24 quirements of section 2(b)(10)(D), subsection (d) of
25 this section, and section 5;

1 “(B) a description of the funding required by
2 such Office to perform the functions specified under
3 subsection (a) for the current fiscal year by category
4 of activity, including the funding required to carry
5 out the requirements of subsection (d); and

6 “(C) the amount of funding provided for such
7 Office for the current fiscal year by each agency par-
8 ticipating in the Program.”;

9 (4) by inserting at the end of section 3 the fol-
10 lowing new subsection:

11 “(d) PUBLIC INFORMATION.—(1) The National
12 Nanotechnology Coordination Office shall develop and
13 maintain a database accessible by the public of projects
14 funded under the Environmental, Health, and Safety, the
15 Education and Societal Dimensions, and the
16 Nanomanufacturing program component areas, or any
17 successor program component areas, including a descrip-
18 tion of each project, its source of funding by agency, and
19 its funding history. For the Environmental, Health, and
20 Safety program component area, or any successor pro-
21 gram component area, projects shall be grouped by major
22 objective as defined by the research plan required under
23 section 3(b) of the National Nanotechnology Initiative
24 Amendments Act of 2008. For the Education and Societal
25 Dimensions program component area, or any successor

1 program component area, the projects shall be grouped in
2 subcategories of—

3 “(A) education in formal settings;

4 “(B) education in informal settings;

5 “(C) public outreach; and

6 “(D) ethical, legal, and other societal issues.

7 “(2) The National Nanotechnology Coordination Of-
8 fice shall develop, maintain, and publicize information on
9 nanotechnology facilities supported under the Program,
10 and may include information on nanotechnology facilities
11 supported by the States, that are accessible for use by in-
12 dividuals from academic institutions and from industry.
13 The information shall include at a minimum the terms and
14 conditions for the use of each facility, a description of the
15 capabilities of the instruments and equipment available for
16 use at the facility, and a description of the technical sup-
17 port available to assist users of the facility.”;

18 (5) in section 4(a)—

19 (A) by striking “or designate”;

20 (B) by inserting “as a distinct entity”
21 after “Advisory Panel”; and

22 (C) by inserting at the end “The Advisory
23 Panel shall form a subpanel with membership
24 having specific qualifications tailored to enable

1 it to carry out the requirements of subsection
2 (c)(7).”;

3 (6) in section 4(b)—

4 (A) by striking “or designated” and “or
5 designating”; and

6 (B) by adding at the end the following:

7 “At least one member of the Advisory Panel
8 shall be an individual employed by and rep-
9 resenting a minority-serving institution.”;

10 (7) by amending section 5 to read as follows:

11 **“SEC. 5. TRIENNIAL EXTERNAL REVIEW OF THE NATIONAL**
12 **NANOTECHNOLOGY PROGRAM.**

13 “(a) IN GENERAL.—The Director of the National
14 Nanotechnology Coordination Office shall enter into an ar-
15 rangement with the National Research Council of the Na-
16 tional Academy of Sciences to conduct a triennial review
17 of the Program. The Director shall ensure that the ar-
18 rangement with the National Research Council is con-
19 cluded in order to allow sufficient time for the reporting
20 requirements of subsection (b) to be satisfied. Each tri-
21 ennial review shall include an evaluation of the—

22 “(1) research priorities and technical content of
23 the Program, including whether the allocation of
24 funding among program component areas, as des-
25 ignated according to section 2(c)(2), is appropriate;

1 “(2) effectiveness of the Program’s manage-
2 ment and coordination across agencies and dis-
3 ciplines, including an assessment of the effectiveness
4 of the National Nanotechnology Coordination Office;

5 “(3) Program’s scientific and technological ac-
6 complishments and its success in transferring tech-
7 nology to the private sector; and

8 “(4) adequacy of the Program’s activities ad-
9 dressing ethical, legal, environmental, and other ap-
10 propriate societal concerns, including human health
11 concerns.

12 “(b) EVALUATION TO BE TRANSMITTED TO CON-
13 GRESS.—The National Research Council shall document
14 the results of each triennial review carried out in accord-
15 ance with subsection (a) in a report that includes any rec-
16 ommendations for ways to improve the Program’s man-
17 agement and coordination processes and for changes to
18 the Program’s objectives, funding priorities, and technical
19 content. Each report shall be submitted to the Director
20 of the National Nanotechnology Coordination Office, who
21 shall transmit it to the Advisory Panel, the Committee on
22 Commerce, Science, and Transportation of the Senate,
23 and the Committee on Science and Technology of the
24 House of Representatives not later than September 30 of

1 every third year, with the first report due September 30,
2 2009.

3 “(c) FUNDING.—Of the amounts provided in accord-
4 ance with section 3(b)(1), the following amounts shall be
5 available to carry out this section:

6 “(1) \$500,000 for fiscal year 2009.

7 “(2) \$500,000 for fiscal year 2010.

8 “(3) \$500,000 for fiscal year 2011.”; and

9 (8) in section 10—

10 (A) by amending paragraph (2) to read as
11 follows:

12 “(2) NANOTECHNOLOGY.—The term
13 ‘nanotechnology’ means the science and technology
14 that will enable one to understand, measure, manip-
15 ulate, and manufacture at the nanoscale, aimed at
16 creating materials, devices, and systems with fun-
17 damentally new properties or functions.”; and

18 (B) by adding at the end the following new
19 paragraph:

20 “(7) NANOSCALE.—The term ‘nanoscale’ means
21 one or more dimensions of between approximately 1
22 and 100 nanometers.”.

23 **SEC. 3. SOCIETAL DIMENSIONS OF NANOTECHNOLOGY.**

24 (a) COORDINATOR FOR SOCIETAL DIMENSIONS OF
25 NANOTECHNOLOGY.—The Director of the Office of

1 Science and Technology Policy shall designate an associate
2 director of the Office of Science and Technology Policy
3 as the Coordinator for Societal Dimensions of
4 Nanotechnology. The Coordinator shall be responsible for
5 oversight of the coordination, planning, and budget
6 prioritization of activities required by section 2(b)(10) of
7 the 21st Century Nanotechnology Research and Develop-
8 ment Act (15 U.S.C. 7501(b)(10)). The Coordinator shall,
9 with the assistance of appropriate senior officials of the
10 agencies funding activities within the Environmental,
11 Health, and Safety and the Education and Societal Di-
12 mensions program component areas of the Program, or
13 any successor program component areas, ensure that the
14 requirements of such section 2(b)(10) are satisfied. The
15 responsibilities of the Coordinator shall include—

- 16 (1) ensuring that a research plan for the envi-
17 ronmental, health, and safety research activities re-
18 quired under subsection (b) is developed, updated,
19 and implemented and that the plan is responsive to
20 the recommendations of the subpanel of the Advi-
21 sory Panel established under section 4(a) of the 21st
22 Century Nanotechnology Research and Development
23 Act (15 U.S.C. 7503(a)), as amended by this Act;
- 24 (2) encouraging and monitoring the efforts of
25 the agencies participating in the Program to allocate

1 the level of resources and management attention
2 necessary to ensure that the ethical, legal, environ-
3 mental, and other appropriate societal concerns re-
4 lated to nanotechnology, including human health
5 concerns, are addressed under the Program, includ-
6 ing the implementation of the research plan de-
7 scribed in subsection (b); and

8 (3) encouraging the agencies required to de-
9 velop the research plan under subsection (b) to iden-
10 tify, assess, and implement suitable mechanisms for
11 the establishment of public-private partnerships for
12 support of environmental, health, and safety re-
13 search.

14 (b) RESEARCH PLAN.—

15 (1) IN GENERAL.—The Coordinator for Societal
16 Dimensions of Nanotechnology shall convene and
17 chair a panel comprised of representatives from the
18 agencies funding research activities under the Envi-
19 ronmental, Health, and Safety program component
20 area of the Program, or any successor program com-
21 ponent area, and from such other agencies as the
22 Coordinator considers necessary to develop, periodi-
23 cally update, and coordinate the implementation of
24 a research plan for this program component area. In
25 developing and updating the plan, the panel con-

1 vened by the Coordinator shall solicit and be respon-
2 sive to recommendations and advice from—

3 (A) the subpanel of the Advisory Panel es-
4 tablished under section 4(a) of the 21st Cen-
5 tury Nanotechnology Research and Develop-
6 ment Act (15 U.S.C. 7503(a)), as amended by
7 this Act; and

8 (B) the agencies responsible for environ-
9 mental, health, and safety regulations associ-
10 ated with the production, use, and disposal of
11 nanoscale materials and products.

12 (2) DEVELOPMENT OF STANDARDS.—The plan
13 required under paragraph (1) shall include a de-
14 scription of how the Program will help to ensure the
15 development of—

16 (A) standards related to nomenclature as-
17 sociated with engineered nanoscale materials;

18 (B) engineered nanoscale standard ref-
19 erence materials for environmental, health, and
20 safety testing; and

21 (C) standards related to methods and pro-
22 cedures for detecting, measuring, monitoring,
23 sampling, and testing engineered nanoscale ma-
24 terials for environmental, health, and safety im-
25 pacts.

1 (3) COMPONENTS OF PLAN.—The plan required
2 under paragraph (1) shall, with respect to activities
3 described in paragraphs (1) and (2)—

4 (A) specify near-term research objectives
5 and long-term research objectives;

6 (B) specify milestones associated with each
7 near-term objective and the estimated time and
8 resources required to reach each milestone;

9 (C) with respect to subparagraphs (A) and
10 (B), describe the role of each agency carrying
11 out or sponsoring research in order to meet the
12 objectives specified under subparagraph (A) and
13 to achieve the milestones specified under sub-
14 paragraph (B);

15 (D) specify the funding allocated to each
16 major objective of the plan and the source of
17 funding by agency for the current fiscal year;
18 and

19 (E) estimate the funding required for each
20 major objective of the plan and the source of
21 funding by agency for the following 3 fiscal
22 years.

23 (4) TRANSMITTAL TO CONGRESS.—The plan re-
24 quired under paragraph (1) shall be submitted not
25 later than 60 days after the date of enactment of

1 this Act to the Committee on Commerce, Science,
2 and Transportation of the Senate and the Com-
3 mittee on Science and Technology of the House of
4 Representatives.

5 (5) UPDATING AND APPENDING TO REPORT.—

6 The plan required under paragraph (1) shall be up-
7 dated annually and appended to the report required
8 under section 2(d) of the 21st Century
9 Nanotechnology Research and Development Act (15
10 U.S.C. 7501(d)).

11 (c) NANOTECHNOLOGY PARTNERSHIPS.—

12 (1) ESTABLISHMENT.—As part of the program
13 authorized by section 9 of the National Science
14 Foundation Authorization Act of 2002, the Director
15 of the National Science Foundation shall provide 1
16 or more grants to establish partnerships as defined
17 by subsection (a)(2) of that section, except that each
18 such partnership shall include 1 or more businesses
19 engaged in the production of nanoscale materials,
20 products, or devices. Partnerships established in ac-
21 cordance with this subsection shall be designated as
22 “Nanotechnology Education Partnerships”.

23 (2) PURPOSE.—Nanotechnology Education
24 Partnerships shall be designed to recruit and help
25 prepare secondary school students to pursue postsec-

1 ondary level courses of instruction in
2 nanotechnology. At a minimum, grants shall be used
3 to support—

4 (A) professional development activities to
5 enable secondary school teachers to use cur-
6 ricular materials incorporating nanotechnology
7 and to inform teachers about career possibilities
8 for students in nanotechnology;

9 (B) enrichment programs for students, in-
10 cluding access to nanotechnology facilities and
11 equipment at partner institutions, to increase
12 their understanding of nanoscale science and
13 technology and to inform them about career
14 possibilities in nanotechnology as scientists, en-
15 gineers, and technicians; and

16 (C) identification of appropriate
17 nanotechnology educational materials and incor-
18 poration of nanotechnology into the curriculum
19 for secondary school students at one or more
20 organizations participating in a Partnership.

21 (3) SELECTION.—Grants under this subsection
22 shall be awarded in accordance with subsection (b)
23 of such section 9, except that paragraph (3)(B) of
24 that subsection shall not apply.

25 (d) UNDERGRADUATE EDUCATION PROGRAMS.—

1 (1) ACTIVITIES SUPPORTED.—As part of the
2 activities included under the Education and Societal
3 Dimensions program component area, or any suc-
4 cessor program component area, the Program shall
5 support efforts to introduce nanoscale science, engi-
6 neering, and technology into undergraduate science
7 and engineering education through a variety of
8 interdisciplinary approaches. Activities supported
9 may include—

10 (A) development of courses of instruction
11 or modules to existing courses;

12 (B) faculty professional development; and

13 (C) acquisition of equipment and instru-
14 mentation suitable for undergraduate education
15 and research in nanotechnology.

16 (2) COURSE, CURRICULUM, AND LABORATORY
17 IMPROVEMENT AUTHORIZATION.—There are author-
18 ized to be appropriated to the Director of the Na-
19 tional Science Foundation to carry out activities de-
20 scribed in paragraph (1) through the Course, Cur-
21 riculum, and Laboratory Improvement program—

22 (A) from amounts authorized under section
23 7002(b)(2)(B) of the America COMPETES
24 Act, \$5,000,000 for fiscal year 2009; and

1 (B) from amounts authorized under sec-
2 tion 7002(c)(2)(B) of the America COMPETES
3 Act, \$5,000,000 for fiscal year 2010.

4 (3) ADVANCED TECHNOLOGY EDUCATION AU-
5 THORIZATION.—There are authorized to be appro-
6 priated to the Director of the National Science
7 Foundation to carry out activities described in para-
8 graph (1) through the Advanced Technology Edu-
9 cation program—

10 (A) from amounts authorized under section
11 7002(b)(2)(B) of the America COMPETES
12 Act, \$5,000,000 for fiscal year 2009; and

13 (B) from amounts authorized under sec-
14 tion 7002(c)(2)(B) of the America COMPETES
15 Act, \$5,000,000 for fiscal year 2010.

16 (e) INTERAGENCY WORKING GROUP.—The National
17 Science and Technology Council shall establish under the
18 Nanoscale Science, Engineering, and Technology Sub-
19 committee an Education Working Group to coordinate,
20 prioritize, and plan the educational activities supported
21 under the Program.

22 (f) SOCIETAL DIMENSIONS IN NANOTECHNOLOGY
23 EDUCATION ACTIVITIES.—Activities supported under the
24 Education and Societal Dimensions program component
25 area, or any successor program component area, that in-

1 involve informal, precollege, or undergraduate
2 nanotechnology education shall include education regard-
3 ing the environmental, health and safety, and other soci-
4 etal aspects of nanotechnology.

5 (g) REMOTE ACCESS TO NANOTECHNOLOGY FACILI-
6 TIES.—(1) Agencies supporting nanotechnology research
7 facilities as part of the Program shall require the entities
8 that operate such facilities to allow access via the Internet,
9 and support the costs associated with the provision of such
10 access, by secondary school students and teachers, to in-
11 struments and equipment within such facilities for edu-
12 cational purposes. The agencies may waive this require-
13 ment for cases when particular facilities would be inappro-
14 priate for educational purposes or the costs for providing
15 such access would be prohibitive.

16 (2) The agencies identified in paragraph (1) shall re-
17 quire the entities that operate such nanotechnology re-
18 search facilities to establish and publish procedures, guide-
19 lines, and conditions for the submission and approval of
20 applications for the use of the facilities for the purpose
21 identified in paragraph (1) and shall authorize personnel
22 who operate the facilities to provide necessary technical
23 support to students and teachers.

24 **SEC. 4. TECHNOLOGY TRANSFER.**

25 (a) PROTOTYPING.—

1 (1) ACCESS TO FACILITIES.—In accordance
2 with section 2(b)(7) of 21st Century Nanotechnology
3 Research and Development Act (15 U.S.C.
4 7501(b)(7)), the agencies supporting nanotechnology
5 research facilities as part of the Program shall pro-
6 vide access to such facilities to companies for the
7 purpose of assisting the companies in the develop-
8 ment of prototypes of nanoscale products, devices, or
9 processes (or products, devices, or processes enabled
10 by nanotechnology) for determining proof of concept.
11 The agencies shall publicize the availability of these
12 facilities and encourage their use by companies as
13 provided for in this section.

14 (2) PROCEDURES.—The agencies identified in
15 paragraph (1)—

16 (A) shall establish and publish procedures,
17 guidelines, and conditions for the submission
18 and approval of applications for use of
19 nanotechnology facilities;

20 (B) shall publish descriptions of the capa-
21 bilities of facilities available for use under this
22 subsection, including the availability of tech-
23 nical support; and

24 (C) may waive recovery, require full recov-
25 ery, or require partial recovery of the costs as-

1 sociated with use of the facilities for projects
2 under this subsection.

3 (3) SELECTION AND CRITERIA.—In cases when
4 less than full cost recovery is required pursuant to
5 paragraph (2)(C), projects provided access to
6 nanotechnology facilities in accordance with this sub-
7 section shall be selected through a competitive,
8 merit-based process, and the criteria for the selec-
9 tion of such projects shall include at a minimum—

10 (A) the readiness of the project for tech-
11 nology demonstration;

12 (B) evidence of a commitment by the ap-
13 plicant for further development of the project to
14 full commercialization if the proof of concept is
15 established by the prototype; and

16 (C) evidence of the potential for further
17 funding from private sector sources following
18 the successful demonstration of proof of con-
19 cept.

20 The agencies may give special consideration in se-
21 lecting projects to applications that are relevant to
22 important national needs or requirements.

23 (b) USE OF EXISTING TECHNOLOGY TRANSFER PRO-
24 GRAMS.—

1 (1) PARTICIPATING AGENCIES.—Each agency
2 participating in the Program shall—

3 (A) encourage the submission of applica-
4 tions for support of nanotechnology related
5 projects to the Small Business Innovation Re-
6 search Program and the Small Business Tech-
7 nology Transfer Program administered by such
8 agencies; and

9 (B) through the National Nanotechnology
10 Coordination Office and within 6 months after
11 the date of enactment of this Act, submit to the
12 Committee on Commerce, Science, and Trans-
13 portation of the Senate and the Committee on
14 Science and Technology of the House of Rep-
15 resentatives—

16 (i) the plan described in section
17 2(c)(7) of the 21st Century
18 Nanotechnology Research and Develop-
19 ment Act (15 U.S.C. 7501(c)(7)); and

20 (ii) a report specifying, if the agency
21 administers a Small Business Innovation
22 Research Program and a Small Business
23 Technology Transfer Program—

24 (I) the number of proposals re-
25 ceived for nanotechnology related

1 projects during the current fiscal year
2 and the previous 2 fiscal years;

3 (II) the number of such pro-
4 posals funded in each year;

5 (III) the total number of
6 nanotechnology related projects fund-
7 ed and the amount of funding pro-
8 vided for fiscal year 2003 through fis-
9 cal year 2007; and

10 (IV) a description of the projects
11 identified in accordance with sub-
12 clause (III) which received private sec-
13 tor funding beyond the period of
14 phase II support.

15 (2) NATIONAL INSTITUTE OF STANDARDS AND
16 TECHNOLOGY.—The Director of the National Insti-
17 tute of Standards and Technology in carrying out
18 the requirements of section 28 of the National Insti-
19 tute of Standards and Technology Act (15 U.S.C.
20 278n) shall—

21 (A) in regard to subsection (d) of that sec-
22 tion, encourage the submission of proposals for
23 support of nanotechnology related projects; and

24 (B) in regard to subsection (g) of that sec-
25 tion, include a description of how the require-

1 ment of subparagraph (A) of this paragraph is
2 being met, the number of proposals for
3 nanotechnology related projects received, the
4 number of such proposals funded, the total
5 number of such projects funded since the begin-
6 ning of the Technology Innovation Program,
7 and the outcomes of such funded projects in
8 terms of the metrics developed in accordance
9 with such subsection (g).

10 (3) TIP ADVISORY BOARD.—The TIP Advisory
11 Board established under section 28(k) of the Na-
12 tional Institute of Standards and Technology Act
13 (15 U.S.C. 278n(k)), in carrying out its responsibil-
14 ities under subsection (k)(3), shall provide the Di-
15 rector of the National Institute of Standards and
16 Technology with—

17 (A) advice on how to accomplish the re-
18 quirement of paragraph (2)(A) of this sub-
19 section; and

20 (B) an assessment of the adequacy of the
21 allocation of resources for nanotechnology re-
22 lated projects supported under the Technology
23 Innovation Program.

24 (c) INDUSTRY LIAISON GROUPS.—An objective of the
25 Program shall be to establish industry liaison groups for

1 all industry sectors that would benefit from applications
2 of nanotechnology. The Nanomanufacturing, Industry Li-
3 aison, and Innovation Working Group of the National
4 Science and Technology Council shall actively pursue es-
5 tablishing such liaison groups.

6 (d) COORDINATION WITH STATE INITIATIVES.—Sec-
7 tion 2(b)(5) of the 21st Century Nanotechnology Research
8 and Development Act (15 U.S.C. 7501(b)(5)) is amended
9 to read as follows:

10 “(5) ensuring United States global leadership in
11 the development and application of nanotechnology,
12 including through coordination and leveraging Fed-
13 eral investments with nanotechnology research, de-
14 velopment, and technology transition initiatives sup-
15 ported by the States;”.

16 **SEC. 5. RESEARCH IN AREAS OF NATIONAL IMPORTANCE.**

17 (a) IN GENERAL.—The Program shall include sup-
18 port for nanotechnology research and development activi-
19 ties directed toward application areas that have the poten-
20 tial for significant contributions to national economic com-
21 petitiveness and for other significant societal benefits. The
22 activities supported shall be designed to advance the devel-
23 opment of research discoveries by demonstrating technical
24 solutions to important problems in such areas as nano-
25 electronics, energy efficiency, health care, and water reme-

1 diation and purification. The Advisory Panel shall make
2 recommendations to the Program for candidate research
3 and development areas for support under this section.

4 (b) CHARACTERISTICS.—

5 (1) IN GENERAL.—Research and development
6 activities under this section shall—

7 (A) include projects selected on the basis
8 of applications for support through a competi-
9 tive, merit-based process;

10 (B) involve collaborations among research-
11 ers in academic institutions and industry, and
12 may involve nonprofit research institutions and
13 Federal laboratories, as appropriate;

14 (C) when possible, leverage Federal invest-
15 ments through collaboration with related State
16 initiatives; and

17 (D) include a plan for fostering the trans-
18 fer of research discoveries and the results of
19 technology demonstration activities to industry
20 for commercial development.

21 (2) PROCEDURES.—Determination of the re-
22 quirements for applications under this subsection,
23 review and selection of applications for support, and
24 subsequent funding of projects shall be carried out
25 by a collaboration of no fewer than 2 agencies par-

1 ticipating in the Program. In selecting applications
2 for support, the agencies shall give special consider-
3 ation to projects that include cost sharing from non-
4 Federal sources.

5 (3) INTERDISCIPLINARY RESEARCH CENTERS.—

6 Research and development activities under this sec-
7 tion may be supported through interdisciplinary
8 nanotechnology research centers, as authorized by
9 section 2(b)(4) of the 21st Century Nanotechnology
10 Research and Development Act (15 U.S.C.
11 7501(b)(4)), that are organized to investigate basic
12 research questions and carry out technology dem-
13 onstration activities in areas such as those identified
14 in subsection (a).

15 (c) REPORT.—Reports required under section 2(d) of
16 the 21st Century Nanotechnology Research and Develop-
17 ment Act (15 U.S.C. 7501(d)) shall include a description
18 of research and development areas supported in accord-
19 ance with this section, including the same budget informa-
20 tion as is required for program component areas under
21 paragraphs (1) and (2) of such section 2(d).

22 **SEC. 6. NANOMANUFACTURING RESEARCH.**

23 (a) RESEARCH AREAS.—The Nanomanufacturing
24 program component area, or any successor program com-
25 ponent area, shall include research on—

1 (1) development of instrumentation and tools
2 required for the rapid characterization of nanoscale
3 materials and for monitoring of nanoscale manufac-
4 turing processes; and

5 (2) approaches and techniques for scaling the
6 synthesis of new nanoscale materials to achieve in-
7 dustrial-level production rates.

8 (b) GREEN NANOTECHNOLOGY.—Interdisciplinary re-
9 search centers supported under the Program in accord-
10 ance with section 2(b)(4) of the 21st Century
11 Nanotechnology Research and Development Act (15
12 U.S.C. 7501(b)(4)) that are focused on
13 nanomanufacturing research and centers established
14 under the authority of section 5(b)(3) of this Act shall
15 include as part of the activities of such centers—

16 (1) research on methods and approaches to de-
17 velop environmentally benign nanoscale products and
18 nanoscale manufacturing processes, taking into con-
19 sideration relevant findings and results of research
20 supported under the Environmental, Health, and
21 Safety program component area, or any successor
22 program component area;

23 (2) fostering the transfer of the results of such
24 research to industry; and

1 (3) providing for the education of scientists and
2 engineers through interdisciplinary studies in the
3 principles and techniques for the design and develop-
4 ment of environmentally benign nanoscale products
5 and processes.

6 (c) REVIEW OF NANOMANUFACTURING RESEARCH
7 AND RESEARCH FACILITIES.—

8 (1) PUBLIC MEETING.—Not later than 12
9 months after the date of enactment of this Act, the
10 National Nanotechnology Coordination Office shall
11 sponsor a public meeting, including representation
12 from a wide range of industries engaged in
13 nanoscale manufacturing, to—

14 (A) obtain the views of participants at the
15 meeting on—

16 (i) the relevance and value of the re-
17 search being carried out under the
18 Nanomanufacturing program component
19 area of the Program, or any successor pro-
20 gram component area; and

21 (ii) whether the capabilities of
22 nanotechnology research facilities sup-
23 ported under the Program are adequate—

24 (I) to meet current and near-
25 term requirements for the fabrication

1 and characterization of nanoscale de-
2 vices and systems; and

3 (II) to provide access to and use
4 of instrumentation and equipment at
5 the facilities, by means of networking
6 technology, to individuals who are at
7 locations remote from the facilities;
8 and

9 (B) receive any recommendations on ways
10 to strengthen the research portfolio supported
11 under the Nanomanufacturing program compo-
12 nent area, or any successor program component
13 area, and on improving the capabilities of
14 nanotechnology research facilities supported
15 under the Program.

16 Companies participating in industry liaison groups
17 shall be invited to participate in the meeting. The
18 Coordination Office shall prepare a report docu-
19 menting the findings and recommendations resulting
20 from the meeting.

21 (2) ADVISORY PANEL REVIEW.—The Advisory
22 Panel shall review the Nanomanufacturing program
23 component area of the Program, or any successor
24 program component area, and the capabilities of

1 nanotechnology research facilities supported under
2 the Program to assess—

3 (A) whether the funding for the
4 Nanomanufacturing program component area,
5 or any successor program component area, is
6 adequate and receiving appropriate priority
7 within the overall resources available for the
8 Program;

9 (B) the relevance of the research being
10 supported to the identified needs and require-
11 ments of industry;

12 (C) whether the capabilities of
13 nanotechnology research facilities supported
14 under the Program are adequate—

15 (i) to meet current and near-term re-
16 quirements for the fabrication and charac-
17 terization of nanoscale devices and sys-
18 tems; and

19 (ii) to provide access to and use of in-
20 strumentation and equipment at the facili-
21 ties, by means of networking technology, to
22 individuals who are at locations remote
23 from the facilities; and

24 (D) the level of funding that would be
25 needed to support—

1 (i) the acquisition of instrumentation,
2 equipment, and networking technology suf-
3 ficient to provide the capabilities at
4 nanotechnology research facilities described
5 in subparagraph (C); and

6 (ii) the operation and maintenance of
7 such facilities.

8 In carrying out its assessment, the Advisory Panel
9 shall take into consideration the findings and rec-
10 ommendations from the report required under para-
11 graph (1).

12 (3) REPORT.—Not later than 18 months after
13 the date of enactment of this Act, the Advisory
14 Panel shall submit to the Committee on Commerce,
15 Science, and Transportation of the Senate and the
16 Committee on Science and Technology of the House
17 of Representatives a report on its assessment re-
18 quired under paragraph (2), along with any rec-
19 ommendations and a copy of the report prepared in
20 accordance with paragraph (1).

21 **SEC. 7. DEFINITIONS.**

22 In this Act, terms that are defined in section 10 of
23 the 21st Century Nanotechnology Research and Develop-

1 ment Act (15 U.S.C. 7509) have the meaning given those
 2 terms in that section.

Passed the House of Representatives June 5, 2008.

Attest: LORRAINE C. MILLER,
Clerk.